



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/065,922	11/29/2002	Rainer Bruchhaus	2002P11001US	5323

31366 7590 03/19/2004

HORIZON IP PTE LTD  
166 Kallang Way  
6th Floor  
SINGAPORE 349249,  
SINGAPORE

EXAMINER
----------

FENTY, JESSE A

ART UNIT	PAPER NUMBER
----------	--------------

2815

DATE MAILED: 03/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/065,922	Applicant(s) BRUCHHAUS ET AL.	
	Examiner Jesse A. Fenty	Art Unit 2815	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 17 February 2004.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-5, 11, 13-15 and 20-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5, 11, 13-15 and 20-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Continued Examination Under 37 CFR 1.114*

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 02/17/04 has been entered.

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-5, 11, 13-15 and 20-23 are rejected under 35 U.S.C. 102(e) as being anticipated by Lee (U.S. Patent No. 6,605,835 B2).

In re claims 1 and 20, Lee (Fig. 7) discloses a semiconductor device and method of making the same, comprising:

A substrate (51);

A feature (80) formed on the substrate;

An insulating layer (75) formed on the feature; and

A radiation protection layer (77a) comprising a conductive material (Iridium; column 3, lines 48-50) covering at least all portions of the feature which are sensitive to radiation, the radiation protection layer is isolated from the feature by the insulating layer, the radiation protection layer is sufficiently thick to reduce radiation damage to the portion of the feature sensitive to UV radiation (Iridium is designated as a radiation protection layer in Applicant's Specification, pp. 7, section [0031]).

In re claim 2, Lee discloses the device of claim 1, wherein the feature comprises a ferroelectric capacitor having top (69a) and bottom (65a) electrodes separated by a ferroelectric layer (67a), the ferroelectric layer being sensitive to radiation.

In re claim 3, Lee discloses the device of claim 2, wherein the radiation protection layer is located on sidewalls of the capacitor to form spacers to reduce radiation damage to the ferroelectric layer as a result of portions of the ferroelectric layer which are unprotected by the top electrode.

In re claim 4, Lee discloses the device of claim 2, further comprising a plurality of features to form a memory array (column 3, lines 61-65).

In re claim 5, Lee discloses the device of claim 4, wherein the radiation protection layer is located on sidewalls of the capacitor to form spacers to reduce radiation damage to the ferroelectric layer as a result of portions of the ferroelectric layer which are unprotected by the top electrode.

In re claim 11, Lee discloses the device of claim 1, wherein the material (Iridium) of the radiation protection layer absorbs or serves as a barrier to UV radiation (Iridium has such properties, as disclosed by Applicant in the Specification, section [0021]).

Art Unit: 2815

In re claim 13, Lee discloses the device of claim 11, wherein the insulating layer serves as a barrier to hydrogen (Lee, column 3, lines 48-50).

In re claim 14, Lee discloses the device of claim 11, wherein the material of the radiation protection layer comprises a noble metal, or a noble metal oxide.

In re claim 15, Lee discloses the device of claim 13, wherein the material of the radiation protection layer comprises a noble metal, or noble metal oxide.

In re claim 21, Lee discloses the method of claim 20, wherein the feature comprises a ferroelectric capacitor having a ferroelectric layer between top and bottom electrode, the radiation protection layer reduces radiation damage to the ferroelectric layer as a result of portions of the ferroelectric layer which are unprotected by the top electrode.

In re claim 22, Lee discloses the method of claim 20, wherein forming the radiation protection layer comprises forming spacers comprising the conductive material of the radiation protection layer on sidewalls of a ferroelectric capacitor to reduce radiation damage to the ferroelectric layer of the capacitor as a result of portions of the ferroelectric layer which are unprotected by the top electrode.

In re claim 23, Lee discloses the device of claim 20, wherein the conductive material of the radiation protection layer comprises a noble metal, or noble metal oxide.

3. Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Gnadinger (US 2002/0153542 A1).

In re claim 1, Gnadinger (Fig. 2A) discloses a semiconductor device comprising:

A substrate (20);

Art Unit: 2815

A feature (31, 30, 50) formed on the substrate;

An insulating layer (75) formed on the feature; and

A radiation protection layer (80) comprising a conductive material (aluminum) covering at least all portions of the feature which are sensitive to radiation (see Yokote et al.; 5,315,544; column 1, lines 28-31), the radiation protection layer is isolated from the feature by the insulating layer, the radiation protection layer is sufficiently thick to reduce radiation damage to the portion of the feature sensitive to UV radiation.

#### *Response to Arguments*

4. Applicant's arguments filed 02/17/04 have been fully considered but they are not persuasive. The only argument addressed afterward is that which responds to the rejection of claim 1 over Gnadinger, as that is the only rejection still current from the previous Office Action.

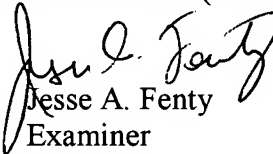
Applicant argues "if the contact materials (80) were to cover all portions of the ferroelectric layer (30), the conductive material would have to completely surround at least the sides of the transistor." As seen by the examiner, the conductive layers (80) do completely surround the entire sides of the ferroelectric layer, as claimed. Applicant continues, "this could result in both contact to be electrically coupled, shorting out the transistor..." This is a confusing statement, as Examiner does not see how or why such conductive layers should be electrically coupled to achieve their desired effect. The conductive layers of Gnadinger provide the radiation protection of the side layers that is not covered by the platinum upper electrode (50). Further, such mention of electrical coupling is absent from the claims.

*Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jesse A. Fenty whose telephone number is 571-272-1729. The examiner can normally be reached on 5/4-9 1st Fri. Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on 571-272-1664. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Jesse A. Fenty  
Examiner  
Art Unit 2815